NASA GODDARD SPACE FLIGHT CENTER

GMSEC

GSFC Mission Services Evolution Center

COMPONENT

At A Glance

SIMSS is a flexible & easily configurable collection of modules for mission testing, simulations, and real-time operations.

Features

- Client/Server architecture
- GMSEC-Compliant
- Easily configurable set of modules (projects)
- Project save and restore
- Scenario (scripting) driven
- Extremely portable, laptop or laptop w/docking station

Benefits

- Provides low cost spacecraft simulations capabilities
- Provides data generation or data capture and evaluation in portable configuration
- Provides data modification and/or reformatting in real-time
- User can configure system for variety of uses

Scalable Integrated Multi-Mission Support System (SIMSS)

Summary

SIMSS is a collection of software modules and COTS hardware designed to provide a mission with testing, simulations, and real-time operational capabilities in one inexpensive package. The flexible configurations allow the user to generate, validate, and/or monitor telemetry and command messages, log data, and communicate with other ground components through a variety of IP and hardware interfaces. Users can graphically link the SIMSS modules together and configure them ("plug and play") at runtime to support specific simulations, testing, and operational scenarios.

SIMSS running on laptop with docking station.

Mission Benefits

- Provides low-to-medium spacecraft simulations. SIMSS open architecture allows mission-specific modules to be plugged in easily. The SIMSS generic modules can also be customized as needed for specific mission requirements.
- Provides real-time and off-line data quality monitoring of real or simulated spacecraft data.
- Provides capability to merge spacecraft instrument data with simulated data.
- Quick and easy installation on Windows based PCs allows project to use multiple copies cheaply.
- Vast library of generic software modules provides mission with wide variety of uses.
- Supports legacy and future missions.

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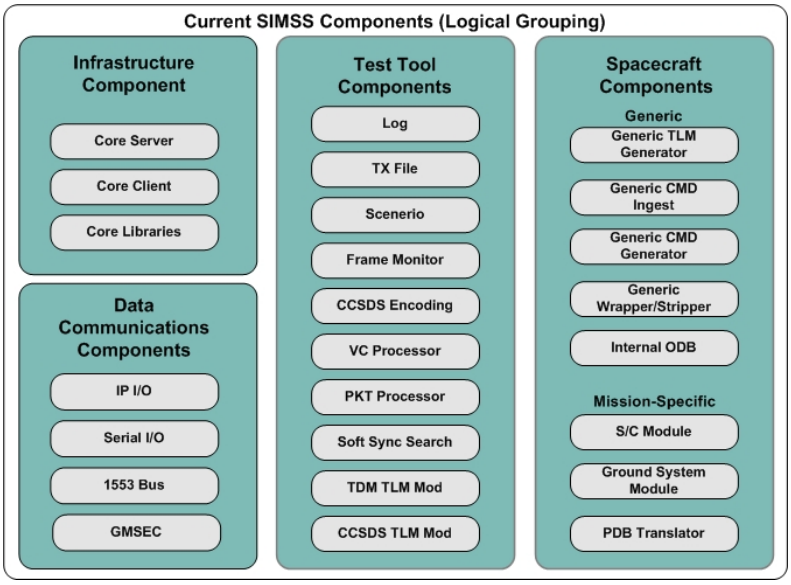
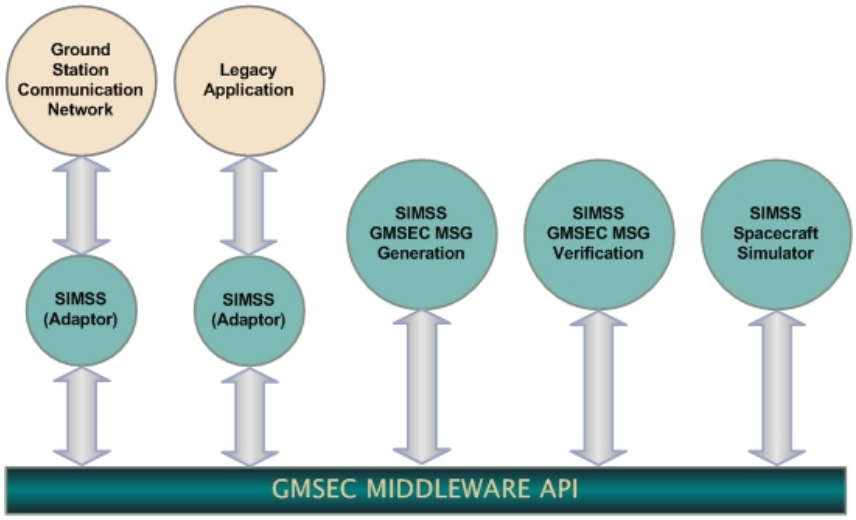


SIMSS Role in GMSEC

SIMSS is serving the GMSEC project for testing and simulations. Prototyping the middleware interface (GMSEC API) was performed using SIMSS with a direct interface to the COTS middleware packages *SmartSockets* and *Rendezvous*. SIMSS will have the capability to transmit and receive all GMSEC messages so that each GMSEC component can test their compliance with the GMSEC message formats. The initial performance tests will be performed using SIMSS for data transmission and validation. SIMSS will also be used in future simulations by generating GMSEC compliant spacecraft telemetry and receiving spacecraft commands.



SIMSS Mission/project list

The list of missions/projects using the SIMSS architecture for its testing/simulations needs: Aqua, Aura, CargoPC(JSC), EO1, ERBS, GOES-N, HST, ICESat, JWST, OiAB(JSC), STS, SWIFT.

NASA facilities using SIMSS architecture during real-time operations: MILA, Wallops, MOSA, ACE MOC, SOHO MOC, WIND/POLAR MOC.